

REMARKS

Claims 1-10 and 25 remain in the application with claim 1 in independent form. No claims are presently amended, cancelled, or added. Claims 11-18 were previously cancelled as non-elected claims that were subject to a Restriction Requirement. Claims 19-24 were also previously cancelled.

Claims 1, 2, 6-10, and 25 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kolluri et al. (PCT Publication No. WO98/10116) in view of Roth et al. (USPN 5414324). Claims 3-5 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kolluri et al. in view of Roth et al. as applied to claim 1, and further in view of either Rickerby et al. (USPN 6,176,982) or O'Reilly et al. (PCT Publication No. WO02/35576). Claims 1-10 and 25 stand provisionally rejected under the judicially-created doctrine of obviousness-type double patenting over copending U.S. App. No. 10/510555. For the reasons set forth in detail below, the Applicants respectfully traverse the rejections on the basis that one of skill in the art would **not** have arrived at the instant invention based on the knowledge obtained as a result of the combined teachings of Kolluri et al. and Roth et al.

To summarize the relevant standards that the Examiner must apply when attempting to establish obviousness of claims, 35 U.S.C. §103 forbids issuance of a patent when "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1734, 82 USPQ2d 1385, 1391 (2007). The question of obviousness is resolved on the basis of the four underlying factual

determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966). See also KSR, 127 S.Ct. at 1734, 82 USPQ2d at 1391.

In *KSR*, the Court noted that “[t]o facilitate review, this analysis should be made explicit.” KSR, 127 S.Ct. at 1740-41, 82 USPQ2d at 1396. (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness” (Emphasis added))). However, “the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.* When making an obviousness rejection, Office personnel must therefore ensure that the written record includes findings of fact concerning the state of the art and the teachings of the references applied.

As succinctly summarized in MPEP 2141(II.), the focus when making a determination of obviousness should be on what a person of ordinary skill in the pertinent art **would have known at the time of the invention, and on what such a person would have reasonably expected to have been able to do in view of that knowledge** (emphasis added).

Finally, the Examiner is reminded that impermissible hindsight cannot be used in the obviousness analysis. As reinforced by the U.S. Supreme Court in *KSR*,

A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning. See *Graham*, 383 U.S. at 36, 86 S.Ct. 684 (warning against a “temptation to read into the prior art the teachings of the invention in issue” and

instructing courts to “ ‘guard against slipping into the use of hindsight’ ” (quoting *Monroe Auto Equipment Co. v. Heckethorn Mfg. & Supply Co.*, 332 F.2d 406, 412 (C.A.6 1964))).

KSR, 127 S.Ct. at 1742, 82 USPQ2d at 1397.

Rejections Relying Upon the Combination of Kolluri et al. and Roth et al.

The Applicants respectfully submit that one of skill in the art would not have been reasonably expected to arrive at the instant invention, as claimed, with knowledge of the combined teachings of Kolluri et al. and Roth et al. at the time of the instant invention.

The Applicants do not dispute the Examiner’s statements relative to the fact that claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. However, the Applicants respectfully submit that the manner in which an apparatus taught by a prior art reference is intended to function **does**, in fact, have a bearing on how one of skill in the art would have understood the teachings provided by that prior art, and therefore have a bearing on what a person of ordinary skill would have known or could have done based on the teachings of that prior art. Stated differently, intended use of an apparatus taught in the prior art clearly has a bearing on how one of skill in the art would be taught to modify the apparatus, and it is well settled that a prior art reference cannot be modified in a way that changes the principle of operation of the prior art reference, and further cannot be modified in a way that renders the reference inoperable for its intended purpose. See MPEP § 2143.01. Based on these principles, the Applicants respectfully submit that one of skill in the art would not have modified the apparatus taught by Kolluri et al. to include a dielectric between the electrodes taught therein.

For purposes of the instant analysis, it is **very important** that Kolluri et al. only intends for the apparatus taught therein to be used at vacuum pressure due to the fact vacuum pressure is **strictly required** to produce a uniform plasma with the apparatus of Kolluri et al. due to the absence of a dielectric between the electrodes. However, when vacuum pressure is used, a uniform plasma discharge may be produced between electrodes without the inclusion of a dielectric between the electrodes. Without use of vacuum pressure, the apparatus of Kolluri et al. would produce a filamentary discharge and would be ineffective to produce uniform films, which is the goal of the process taught by Kolluri et al. (see lines 15-17 on page 3 of Kolluri et al.; see also column 2, lines 1-7 of Roth et al., which indicates that filamentary discharges are not suitable for the surface treatment of materials.)

Further, vacuum pressure is required during operation of the apparatus of Kolluri et al. for purposes of vaporizing the atomized liquid that is introduced into the plasma discharge produced in the apparatus taught therein. The attached Declaration, executed by inventor Dr. Andrew Goodwin relative to a related application in which rejections were also established based on Kolluri et al., supports the fact that the atomized liquid introduced into the apparatus of Kolluri et al. is vaporized (see paragraph 10 of the Declaration).

In view of the foregoing, it is clear that one of skill in the art would **not** be taught to eliminate use of vacuum pressure during operation of the apparatus taught by Kolluri et al., and to use the apparatus of Kolluri et al. at atmospheric pressure would render the apparatus unsuitable for producing the results intended by Kolluri et al.

The fact that one of skill in the art would **not** eliminate use of vacuum pressure during operation of the apparatus taught by Kolluri et al. is **very relevant to the**

determination of how a person of ordinary skill would have understood the teachings of Kolluri et al., and what a person of ordinary skill would have known or could have done with the teachings of Kolluri et al. in view of the further teachings of Roth et al. Simply stated, in view of the fact that vacuum pressure cannot be eliminated during operation of the apparatus taught by Kolluri et al., one of skill in the art would not have modified Kolluri et al. in a way that employs the dielectrics of Roth et al. because Roth et al. is **clearly** directed to an atmospheric pressure plasma. As known to those of skill in the art, a dielectric barrier is required between electrodes that are operated at atmospheric pressure for purposes of producing a uniform plasma discharge. Absent the dielectric, and as set forth above, an undesirable filament discharge would be produced in the apparatus of Roth et al. Because the apparatus of Kolluri et al. is **strictly required** to be operated at vacuum pressure to accomplish the goals of the invention taught by Kolluri et al., one of skill in the art would **not** be taught to modify Kolluri et al. in a manner that would make the apparatus of Kolluri et al. operable at atmospheric pressure and, thus, would not have modified Kolluri et al. based upon the teachings of Roth et al. in the manner proposed by the Examiner. Thus, the Applicants respectfully submit that the foregoing **effectively rebuts** the Examiner's statement supporting motivation to modify the apparatus of Kolluri et al. to include the dielectric of Roth et al.

As a final note, the Applicants respectfully submit that the claimed orientation of the pair of electrodes has significant non-obvious advantages, which are set forth in paragraph [0045] on page 14 paragraph and [0054] on page 18 of the original application as filed. In particular, the vertical orientation of the pairs of electrodes enable an open perimeter process

in which the different plasma zones require no physical barrier separation due to the fact that atomized liquid or solid travels under gravity through the intended plasma regions and, therefore, is naturally kept separate from other plasma regions where no atomized liquid or solid is desired. **Importantly, because the atomized liquid introduced into the vacuum pressure plasma of Kolluri et al. is vaporized due to the vacuum pressure, there would be no such concerns with contamination of one plasma region with atomized liquid intended for a different plasma region.** Thus, the claimed configuration of the electrodes, and the presence of more than one pair of electrodes, presents new and unexpected results in the instantly claimed apparatus and, therefore, provides another factor that weighs in favor of non-obviousness of the instantly claimed apparatus in view of the combined teachings of Kolluri et al. and Roth et al.

In view of the foregoing, the Applicants respectfully submit that independent claim 1, as well as the claims that depend therefrom, is non-obvious over the combined teachings of Kolluri et al. in view of Roth et al.

Rejections Relying Upon the Combination of Kolluri et al., Roth et al., and Rickerby et al. or O'Reilly et al.

The Applicants respectfully submit that, in view of the foregoing traversal of the rejections over the combination of Kolluri et al. and Roth et al., the rejections further relying upon Rickerby et al. or O'Reilly et al. are also overcome. However, the Applicants note that O'Reilly et al. is not available prior art to the instant application. O'Reilly et al. has a publication date of May 2, 2002, and the instant application has an earliest priority date of April 10, 2002 such that the filing of the instant application precedes the publication of

O'Reilly et al. Because O'Reilly et al. is an International application, and is not a U.S. application (among other reasons), O'Reilly et al. is not effective as prior art under 35 U.S.C. §102(e) as of the filing date thereof, and the earliest effective prior art date of O'Reilly against the instant application is the publication date thereof.

Provisional Obviousness-Type Double Patenting Rejections

The Applicants note that the obviousness-type double patenting rejection over co-pending U.S. App. No. 10/510555 is only a provisional rejection. Therefore, the Applicants expect that such provisional obviousness-type double patenting rejection will be held in abeyance until there is an indication of allowability of either the instant application or the '555 application.

In view of the foregoing, the Applicants respectfully submit that each of the instant rejections have been overcome such that independent claim 1, as well as the claims that depend therefrom, is in condition for allowance, which allowance is respectfully requested.

This Response is timely filed; thus, it is believed that no fees are presently due. However, the Commissioner is hereby authorized to charge any additional fees or credit any overpayment to our Deposit Account No. 08-2789.

Respectfully submitted,

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